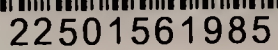


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ANNUAL REPORT
OF THE
SUDAN VETERINARY SERVICE
FOR THE YEAR
1945



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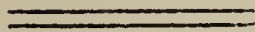
ANNUAL REPORT

OF THE

SUDAN VETERINARY SERVICE

FOR THE YEAR

1945



SECTION I.

STAFF.

There were no changes in the British Staff during the year. One Veterinary Inspector remained released for service with the Sudan Defence Force. Owing to difficulty of recruitment two vacancies remained unfilled.

DISTRIBUTION OF CLASSIFIED TECHNICAL STAFF AS AT 31st DECEMBER, 1945.

DESIGNATION.	NAME.	STATION
Director	W. H. Glanville, 4N., M.R.C.V.S.	Khartoum
Senior Veterinary Inspector ..	Capt. T. Menzies, O.B.E., 4N., M.R.C.V.S., D.V.S.M., (Vict.)	El Obeid
„	J. E. Furney, 4N., M.R.C.V.S.	Wad Medani
„	I. A. Gillespie, M.R.C.V.S.	Kassala
Veterinary Inspector and Dean Khartoum Veterinary School ..	A. W. Chalmers, M.R.C.V.S.	Khartoum
Veterinary Inspector	P. Durran, M.R.C.V.S.	El Fasher
„	J. D. M. Jack, M.R.C.V.S.	Khartoum
„	J. K. Thomson, M.R.C.V.S., D.V.S.M. ..	Malakal
„	P. Z. Mackenzie, M.B.E., M.R.C.V.S. ..	Wad Medani
„	H. B. Luxmoore, B.Sc., M.R.C.V.S. ..	Released for Mily. Service
„	Vacant	El Obeid
Superintendent	J. McKay	Khartoum
Assistant Superintendent	G. M. Anderson	Khartoum
Veterinary Officer	Ibrahim Mohamed Khalil, dip. vet. sci. ..	Khartoum
„	Ahmed Magzoub Abdoun, dip. vet. sci. ..	Wadi Halfa
„	Hussein Hassan Abbo, dip. vet. sci. ..	El Obeid
„	Zein El Abdin Mahmoud, dip. vet. sci. ..	Wad Medani
Veterinary Overseer	Abdulla Hassan Shafie	Khartoum
„ „	Ahmed Mahmud Hamza	Wadi Halfa
Animal Husbandry Officer	Fuad Hassan Lutfi	Khartoum
Animal Husbandry Officer	Mohammed Abdulla Hassan	Khartoum
RESEARCH.		
Senior Veterinary Research Officer	J. T. R. Evans, B.Sc., M.R.C.V.S.	Khartoum
Veterinary Research Officer ..	Vacant	Khartoum
Veterinary Officer	El Amin Abdulla, dip. vet. sci.	Khartoum
„	Mohammed Ali Meheimid, dip. vet. sci. ..	Malakal
Laboratory Assistant	El Rashid Abdel Nebi	Khartoum
„	Hassan El Fiki Ibrahim	Malakal

**ESTABLISHMENT OF OTHER
CLASSIFIED STAFF, 1945.**

1 Head Clerk.
10 Clerks.
3 Book-keepers.
1 Storekeeper.
14 Head Stockmen.
1 Southern Supervisor.
5 Southern Stockmen.

UNCLASSIFIED STAFF AS AT 31st DECEMBER, 1945.

70 Stockmen.
1 Carpenter.
2 Storemen.
5 Motor Drivers.
9 Messengers.
69 Veterinary Attendants.
20 Temporary Veterinary Attendants.
3 Shoeing Smiths.
2 Farriers.
2 Pump Drivers.
1 Watchman.

SECTION II.

DISEASES OF ANIMALS.

DISEASES OF CATTLE.

Cattle Plague.

The incidence of this disease was higher than in recent years. Numerous outbreaks were reported from every province and difficulty was experienced in controlling the disease in some areas. Serious outbreaks occurred in the Gedaref district of Kassala Province. Losses were considerable as the areas involved had been free of cattle plague for about 20 years. Some herds suffered very heavy losses before reports were submitted or control measures could become effective. Energetic action by the tribal authorities helped to bring outbreaks under control once the owners realised the need for early notification of cases of disease in their herds. A bad outbreak also occurred in the Merowe-Dongola district of the Northern Province, a province without a Veterinary Inspector since 1940. The disease first appeared in an area that had been free of the disease for about 30 years. There was delay in reporting the outbreak and it was not suppressed until the Sudanese Veterinary Officer from Khartoum Province had made an extensive tour of the area and had organised and supervised control measures.

The following table summarises cattle plague control of reported outbreaks.

CATTLE PLAGUE 1945.

PROVINCE	Outbreaks	Cattle Involved	Died	Serumised	Vaccinated
Blue Nile	683	169,310	3,025	59,503	—
Darfur	303	95,630	2,051	43,249	—
Kassala	114	28,702	921	13,568	12,351
Khartoum	27	7,116	232	5,773	—
Kordofan	125	27,778	326	19,931	5,342
Northern	70	34,426	1,267	14,119	18,432
Upper Nile	21	30,809	209	30,600	—
	1,343	393,771	8,031	186,743	36,125

In addition to the vaccine used for the control of the above outbreaks a further 285,500 doses were issued as a long range disease control measure or as barter for cattle required at the Malakal laboratory: also, in the irrigated area of the Blue Nile Province 3,353 working oxen received permanent immunity by the serum — virus method, and in dairies near Khartoum 171 cows were immunised with vaccine — virus.

The following table gives the comparative incidence and control of cattle plague during the past five years :—

YEAR.	Outbreaks	Cattle involved	Deaths	Serumised	Vaccinated
1941	1,032	264,659	5,248	107,345	25,455
1942	1,112	279,484	4,872	126,211	36,374
1943	760	199,212	3,391	130,980	57,073
1944	668	181,931	2,359	80,934	13,133
1945	1,343	393,771	8,031	186,743	36,125

Contagious Bovine Pleuro-Pneumonia.

There appeared to be a decreased incidence of this disease. The number of cases detected among the export trade cattle at the quarantines at Khartoum North and Wadi Halfa was 140 compared with 179 in 1944. The improved situation was probably due to the very much reduced number of trade cattle imported from French Equatorial Africa and the improved control measures arranged by Veterinary Inspector, Darfur, for dealing with these imported cattle, which are a constant reservoir of the disease.

Control of contagious bovine pleuro-pneumonia is extremely difficult in many of the pastoral areas. For example Veterinary Inspector, Darfur reports :—

“Complete absence of cooperation by cattle owners makes control of this disease almost impossible. Although the efficacy of the vaccine is undisputed, it lacks the more spectacular value of the cattle plague prophylactics.

Also, the slow insidious nature of the disease detracts from its serious aspect to Arab minds. Attempts have constantly been made to enlist the help of the tribal heads in insisting upon the slaughter of diseased animals — the primary and imperative measure for preventing spread. It is found, however, that such efforts may lead only to active concealment of the disease. Long distance from the laboratory, inaccessibility of the outlying districts, and the short period of the efficacy of the vaccine all combine to defeat any far-reaching attempts at control in this province.”

The following is a summary of reported outbreaks other than those in trade cattle :—

CONTAGIOUS BOVINE PLEURO-PNEUMONIA — 1945

PROVINCE	Out-breaks	Cattle involved	Died or slaughtered	Vaccinated
Blue Nile	5	632	9	629
Darfur	10	8,891	152	2,445
Kassala	—	—	—	—
Khartoum	1	10	—	8
Kordofan	20	3,033	51	2,984
Northern	—	—	—	—
Upper Nile	8	17,608	8	17,600
	44	30,174	220	23,666

Accurate returns of the disease were not obtainable from Equatoria, but several outbreaks were reported and 5,350 doses of vaccine were issued to the province.

The comparative incidence and control measures during the last five years is as follows .—

Year	Out-breaks	Cattle involved	Died or slaughtered	Vaccinated
1941	96	24,195	299	18,117
1942	77	12,066	240	10,932
1943	53	10,538	192	9,033
1944	63	13,766	384	12,138
1945	44	30,174	220	23,666

Foot and Mouth Disease.

The disease was present in its usual mild form in Darfur and Kordofan Province. All Northern cattle required for export were artificially infected with the result that there was no interruption of the export trade due to foot and mouth such as occurred in 1944.

Trypanosomiasis.

Numerous outbreaks were reported from Equatoria and Upper Nile Provinces. Cases were again observed in the southern district of Kassala Province while Veterinary Inspector, Darfur reported that during the last few years trypanosomiasis had increased on the south-west border of the province and that cattle owners, owing to tsetse fly encroachment, were avoiding areas previously extensively grazed.

Anthrax.

A few isolated cases were reported from Blue Nile Province. 22 cases occurred at Khartoum North quarantine and 37 at Wadi Halfa quarantine.

DISEASES OF CAMELS.

Trypanosomiasis.

The disease was widespread and demands for treatment of native owned camels were again very high. Failure of Antrypol to effect a cure in many cases was reported by several Veterinary Inspectors. (The Senior Research Officer comments on the situation in his report which follows).

Mange.

The disease was prevalent in Kassala, Blue Nile, Kordofan, and Darfur Provinces.

DISEASES OF EQUINES.

African Horse Sickness.

A few isolated cases in unvaccinated animals, with eleven deaths, were reported from Kordofan, Kassala and Khartoum Provinces. 1442 doses of vaccine were issued compared with 1561 doses in 1944.

Cryptococcus Infections.

Losses were lower than 1944, 33 horses, 11 mules and 1 donkey being destroyed compared with 68 animals last year. Veterinary Inspector, Upper Nile Province reported that firing and excision had again cut down losses in police animals and that no case discharged as cured had shown new lesions.

DISEASES OF SHEEP AND GOATS.

An undiagnosed disease known locally to flock owners by various names, including "Abu Girba", was reported to have caused heavy losses among sheep and goats in Blue Nile Province particularly in the Fung area. (See Senior Research Officer's report).

Anthrax.

A few isolated cases in sheep and goats were reported in Khartoum Province. 70 cases in sheep were observed in quarantines at Wadi Halfa and Faras.

Sheep Pox.

This disease was reported to have been responsible for 4 deaths and 56 slaughterings at Wadi Halfa quarantine.

Caseous Lymphadenitis.

Odd cases were detected in consignments of export sheep passing through Khartoum North quarantine.

DISEASES OF SWINE.

Swine Fever.

This disease, reported for the first time in the Sudan, appeared on two adjoining farms in Khartoum North district.

DISEASES OF CANINES.

Rabies.

The following table shows the distribution of positive cases of rabies, as confirmed by the Stack Memorial Research laboratories.

PROVINCE	Dogs	Camels	Cattle	Goats	Total
Blue Nile	13	—	—	1	14
Northern	5	1	—	—	6
Kordofan	5	—	—	—	5
Kassala	3	2	—	—	5
Khartoum	5	—	—	—	5
Equatoria	3	—	—	—	3
Darfur	—	—	1	—	1
TOTAL	34	3	1	1	39

SECTION III.

TRADE IN LIVESTOCK AND LIVESTOCK PRODUCTS.

External Trade.

The British Military Authorities continued to take delivery at Shellal of all export cattle and sheep. Fortunately there were no lengthy periods of cessation of export either from navigational difficulties on the Halfa/Shellal reach or from foot and mouth disease such as occurred last year.

Cattle.

The number of cattle exported increased from 34,611 valued at £E. 306,270 in 1944 to 36,281 valued at £E. 354,059. The average live weight at Shellal was 347.2 kilos, an increase of 2.26 kilos over last year's figure. The average price per live kilo at Shellal was 30.9 milliemes (9.7 pence) compared with 27.2 milliemes (6.6 pence) in 1944. A substantial rise in the cost of feeding materials was responsible for the increased prices.

The condition of export cattle was good throughout the year. The high standard of condition could not have been maintained without the assistance of over 3,000 cattle from the Upper Nile Province, which were exported during May and June, months when western cattle are at their leanest. It has been observed during recent years that a larger proportion of uncastrated animals are being exported than formerly. No doubt this is the result of the present system of payment on a live weight basis at Shellal. The exporters prefer entire animals because in addition to weighing heavier than bullocks they lose less condition on the long, arduous journey by road, rail and river.

Only 2,056 cattle were imported from French Equatorial Africa compared with 8,611 in 1944.

Sheep.

Export increased from 104,620 head, valued at £E. 227,694 in 1944 to 116,954 head valued at £E. 263,786. The average live weight at Shellal was 44.9 kilos compared with 44.56 kilos in 1944, while the average price per live kilo was 56.06 milliemes (fourteen pence) against 50.92 milliemes (twelve and one half pence) the previous year.

The standard of sheep exported was good throughout the year. The majority of sheep exported in recent years have been castrated sheep 2 — 2½ years old.

Camels.

The restrictions on export imposed in 1943 were removed. Exports increased and local prices tended to rise. Difficulty was experienced in obtaining good riding camels fit for Government service at less than £E. 25.

Prices varying from £E. 30 — £E. 40 were paid at El Obeid market for fat export " Nagas " (females).

It is estimated that at least 50,000 camels valued at £E. 1,150,000 were exported to Egypt.

Hides.

Hide exports increased from 1371½ tons valued at £E. 129,154 in 1944 to 2124 tons valued at £E. 171,813.

The United Kingdom Commercial Corporation (Sudan) Ltd. continued to purchase all export hides at controlled prices which led to further improvement in the quality of exported hides.

The price of first class airdried hides was increased slightly to encourage their production.

There was practically no trade in Darfur hides. Motor transport rates to rail head at El Obeid from Nyala and Fasher, which used to be the chief hide markets in Darfur, are now more than double pre-war rates while camel transport rates have increased by more than five times. Consequently Darfur traders are unable to pay prices that will induce local cattle owners to prepare and market their hides.

An animal husbandry officer visited Upper Nile and Equatoria province to demonstrate methods of hide preparation and give advice on the transport and marketing of hides. He did much to stimulate interest and clear up misunderstandings about grading in Omdurman.

All hides coming into the Omdurman Hide Pool, where they are graded prior to sale to the United Kingdom Commercial Corporation (Sudan) Ltd., were inspected by veterinary staff and reports detailing the reasons why the hides were graded into the various categories were forwarded to the provinces of origin.

Skins.

Exports of sheep and goat skins increased to 948 tons valued at £E. 206,210 compared with 717 tons valued at £E. 81,962 in 1944.

Internal Trade.

The number of animals slaughtered for food in the principal towns of the Sudan as compared with 1944 was :--

YEAR					Camels	Cattle	Sheep	Goats
1944	...	...	...	...	1,884	40,644	201,193	18,569
1945	...	...	...	...	1,470	37,377	200,713	22,881

Controlled Meat prices in Khartoum were Beef 40m/ms. per oke (3.7 pence per lb.) and Mutton 100 m/ms. per oke (9 pence per lb.)

19,009 cattle at an average price of £E. 4.172 m/ms. per head were sold at El Obeid animal market compared with 21,433 head averaging £E. 4.160 m/ms. in 1944.

SECTION IV. IMPROVEMENT OF LIVESTOCK.

Cattle.

Under the scheme started last year in the Eastern Jebels district of Kordofan to improve the local breed, some 450 stock bulls were selected by a board under the supervision of the Senior Veterinary Inspector. Bloodless castration of some 4,000 bulls considered unsuitable for breeding was carried out by the Veterinary Stockmen and tribal retainers.

Horses.

Veterinary Inspector, Darfur, reports as follows :—

Horse Shows and Fairs.

Horse Fairs were held at Abu Salaa (Habbania, Fellata and Mesalat) and Sibdu (Rizeigat) in December, 1945. A Horse Show for the Beni Helba, Taaisha and Gimr was held at Id El Ghanam in January, 1946.

Abu Sala Horse Fair.

No tribal parade was held but the gathering seemed to be fairly well attended. Out of 208 horses offered for sale 27 were purchased. Of these the best 8 horses were selected for return to the tribes as stallions. In the previous year only 14 horses were purchased out of a total of 260 offered. An excellent parade of mares was seen, the best of them belonging to the Fellata. The display of young stock was average.

Sibdu Horse Fair.

Here again there was no special parade but the gathering was well attended. Out of 130 horses offered for sale 36 were purchased. Most of these were destined for police work, but five horses of superior standard were set aside for return to the tribe as stallions. The Rizeigat mares fall far short of the average standard seen in other tribes but it is felt that they were well suited to their environment and provided a useful source of small, common, hardy horses. The young stock seen was in rather poor condition.

Id El Ghanam Horse Show.

At a tribal parade before the Civil Secretary the following horses were seen :—

Beni Helba	1,946
Taaisha	432
Gimr	288

After the parade 300 horses were offered for sale and 36 were actually purchased. Although this total fell somewhat short of the total required, the decision to retain the best horses

as tribal stallions was adhered to. The best 11 animals were set aside for distribution to the tribes.

The parade of mares was impressive. There is no lack of good female stock in these tribes. This is, of course, chiefly due to the native objection to selling productive females and the survivors of the best bred stock have thus remained with the tribes. A scarcity of grain this year was reflected in the rather poor condition of many of the mares and young stock.

Cash rewards as usual were given for mares and well kept foals but, as a new departure, the best foals and yearlings were given free vaccination against African horse sickness. Fifty doses value P.T. 50 each were given and the scheme was very popular. It will be continued at future horse shows and the results examined.

General Note.

Attention was drawn in last year's report to the unhealthy state of horse-breeding in Darfur and the scarcity of suitable remounts.

At the request of the Central Government, horsebreeding as a whole was discussed by the Veterinary Service and the Governors of Darfur and Kordofan. Particular stress was laid on the necessity for keeping the better horses within the tribes instead of an annual removal of all the best animals with consequent progressive lowering of the general standard. It was obviously not possible to decide upon mere rejection of the best horses offered for sale, which would not only be incomprehensible to breeders but very unfair to them. It was therefore decided that the present establishment of tribal stallions in Darfur should be raised from 45 to three times that number as soon as possible within the next five years. The idea is that the best of the horses each year will be taken for stallions and when the number required is obtained this system will continue and unsuitable or poorer standard stallions will be culled and issued as remounts. Other proposals which have been approved include increased rewards to mares and young stock, free vaccination against horse sickness for better class foals and certain restrictions on the purchasing of horses and their removal from the Province. Provision has also been made for annual cash bonuses to holders of all the new tribal stallions. Permission to anticipate the financial approval asked for in the 1946 Budget for the purchase of suitable stallions was obtained and 25 horses were selected for this purpose at the December, 1945 shows. Cattle prices are now so high that interest in horse breeding is bound to suffer, but when it is remembered that Southern District, Darfur, alone, is now the main source of horses for supply to the whole of the Sudan, it is obviously a matter of great concern. Even in these days of mechanisation there will always be necessity for police and army horses in the Sudan apart from those wanted for recreation.

SECTION V.

EDUCATION.

The Khartoum Veterinary School, together with other higher schools was incorporated in the newly constituted Gordon Memorial College.

It was decided that the Dean should be seconded to the Gordon Memorial College for full time work in the Veterinary School but owing to shortage of professional staff it could not be arranged during the year. The teaching staff, all part time and members of the Sudan Veterinary Service had to give up much of their spare time to school work. Owing to illness among the staff the final year course had to be prolonged for about a month longer than planned.

Three new students joined the school in September and attended courses in Anatomy and Animal Husbandry. The two final year students spent a month of the summer vacation in the Upper Nile Province. Both were awarded diplomas on passing the professional examinations comprising Epizootiology, Animal Industry, Surgery, Medicine and Obstetrics.

SECTION VI.

MISCELLANEOUS.

In general, grazing conditions were good throughout the pastoral areas. Locusts and fires were reported to have caused damage in some areas.

The condition of Government animals was generally good but in urban areas owing to strict rationing of grain and increased costs of animal fodder some owners of working animals found it difficult to keep them in condition.

The army remount depot at Wad Medani was closed down in December and the remaining animals transferred to the depot at Khartoum. The animal strength of Sudan Defence Force units at the end of the year was as follows :—

Horses	444
Mules	365
Camels	165
Donkeys	14
Bulls	48

Owing to the difficulty during recent years of purchasing sufficient suitable camels for the police a remount depot was established in Kassala, thereby enabling the province Veterinary Inspector to purchase animals unfit for immediate police service on account of immature age or poor condition.

Veterinary Hospitals.

Khartoum Veterinary Hospital and Forge :

In-patients	214
Out-patient attendances	5,167
Pairs of shoes fitted :—	
(a) Hand made	1,803
(b) Machine made	264
Hoof trimming, etc.	437

Wad Medani Veterinary Hospital :

In-patients	184
Out-patient attendances	1,987

(Sgd.) W. H. GLANVILLE.

Director,

Sudan Veterinary Service.

APPENDIX I.

FINANCIAL STATEMENT.

The following figures show the actual revenue and expenditure of the Sudan Veterinary Service for the past 3 years.

					1943	1944	1945
1.	Revenue	...	...	... £E.	29,674	38,658	35,822
2.	Expenditure.						
	(i) Personnel and Personal Allowances			£E.	26,530	26,224	25,811
	(ii) Services	...	...	... £E.	15,794	18,357	22,773
	(iii) Capital	...	...	... £E.	—	—	350
	TOTAL		...	£E.	42,324	44,581	48,934

APPENDIX II.

Annual Report of the Senior Research Officer.

A. STAFF

The technical classified staff of the laboratory was the same as in the preceding year and consisted of one Senior Research Officer, two Sudanese Veterinary Officers and two Sudanese Laboratory Assistants. The post of a British Veterinary Research Officer, vacant since 1944, could not be filled.

B. ROUTINE WORK

The main items of routine work were, as usual, as follows :—

- I. Preparation and issue of cattle plague antiserum (Malakal).
- II. Preparation and issue of cattle plague vaccine (Khartoum and Malakal).
- III. Issue of cattle plague virus for “serum simultaneous” immunisation (Khartoum).
- IV. Preparation and issue of contagious bovine pleuro-pneumonia vaccine (Khartoum).
- V. Issue of diagnostic materials (for the mercuric chloride test) and of antrypol for the control of camel trypanosomiasis (Khartoum).
- VI. Distribution of horse-sickness vaccine purchased from Kenya (Khartoum).
- VII. Preparation and issue of blackleg vaccine (Khartoum).
- VIII. Issue of foot and mouth disease virus (Khartoum).
- IX. Preparation and issue of contagious bovine abortion vaccine (Khartoum).
- X. Examination of specimens (Khartoum and Malakal).

I. Cattle Plague Antiserum

A total of 5,730 litres of serum (191,000 nominal doses of 30 cc each) was prepared. This satisfactory output was slightly bigger than that of the previous year and was more than sufficient for the country's requirements. There was no change in the technique of production and preservation, and potency tests showed that it provided adequate protection at a dosage of 6 cc per 100 lbs. body weight.

The supply of large cattle (serum producers) was satisfactory. They were all obtained from the Upper Nile Province and of the six hundred odd used most of them were purchased by contract from local merchants. Many of the bulls came from areas bordering on the tsetse belt on the Abyssinian frontier and, as usual, a big proportion of these showed active *T. congolense* infection shortly after the start of operations. The routine treatment of them with three weekly injections of stibophen was again very successful and, apart from a few bulls treated when in a very advanced stage of the disease, all were apparently cured. It was not practical to verify this with small animal inoculation and the criterion accepted was repeated failure to find trypanosomes in the blood and steady improvement in general bodily condition.

The supply of small cattle (virus producers) was also adequate. Of the 2,251 acquired for the laboratory 1,919 were obtained by barter with cattle plague vaccine, the exchange rate being one small bull for twenty doses of vaccine. The remaining 352 were purchased for cash.

Over 400 of these cattle died of naturally contracted cattle plague either on their way to the laboratory or within a few days of their arrival there. Most of the deaths occurred in two large consignments sent by steamer to Malakal. They contracted cattle plague at Shambe while being delayed there awaiting shipment and, as no veterinary supervision was possible, the disease ran through the two herds.

It is hoped that in future there will be no necessity to obtain susceptible cattle from so far afield and that the cattle-owning tribes within easy reach of Malakal will supply all requirements.

II. Cattle Plague Vaccine

About two thirds of the year's output of vaccine was prepared as a by-product of serum production and cost very little more than the price of the glycerine incorporated in it. The remaining third was made from cattle obtained by barter, as already mentioned. Since each small bull produced about 200 doses of vaccine and was obtained in exchange for 20 doses the expenditure incurred in the special preparation of this product was relatively very small.

Altogether 321,540 doses of 10 cc were issued and this was an increase of nearly 25,000 doses over the previous highest issue (1944). Nearly forty thousand doses were bartered for virus producers and most of the remainder was sold for cash, producing a revenue of about £E. 11,000.

III. Cattle Plague Virus

The issue of 4,504 doses of cattle plague virus in the form of glycerinised lymphoid tissue was roughly a thousand doses in excess of that for the preceding year. The virus was used for the simultaneous immunisation of working oxen in Blue Nile Province.

IV. Contagious Bovine Pleuro-Pneumonia Vaccine

The issues of this vaccine amounted to 36,434 doses and were slightly less than those for 1944. No "accidents" attributable to unexpected virulence of the culture vaccine were reported.

V. Camel Trypanosomiasis Control

The demands for Antrypol (Suramin B.P.) were almost identical in number with those for 1944. The total issued was 36,434 doses. Most of them were distributed on payment for the treatment of privately owned camels, and produced a revenue of about £E. 9,000.

For the first time unfavourable reports were received on the therapeutic value of this drug in *T. evansi* infections in camels. It was not possible to determine what proportion of the treated camels failed to respond to the standard dose of 5 grams but judging from the numbers that returned for treatment the figure must have been fairly high.

Rare cases in which repeated large doses of Antrypol (I.C.I.), and, in earlier years, Naganol (Bayer), had failed to effect a cure have been encountered during the last fifteen years or so. Unfortunately it has never been possible to study these refractory cases except to note that in all the blood smears examined the trypanosomes appeared to be morphologically identical with the ordinary *T. evansi*. It was assumed on circumstantial evidence that atypical camels rather than atypical trypanosomes were at issue, because if specially resistant trypanosomes were responsible they would have been the ones with the greatest chance of survival and in a very short time there would have been large numbers of camels infected with them.

Experimental work has been planned with the object of determining whether in fact there does exist a natural antrypol-resistant strain of trypanosomes.

The possibility of an antrypol-resistant strain having recently developed as the result of repeated administration of subcurative doses of the drug was also being investigated at the end of the year. Although the drug is dispensed from the laboratory in sealed 5 gram packets there is no guarantee that in all cases treated the full dose is administered.

Most of the injections are given by native stockmen and, as antrypol is a readily saleable product and most of the camel owners are ignorant nomads, it is fairly certain that much pilfering of the drug takes place and that many camels have received an insufficient amount to effect a complete cure.

VI. Horse Sickness Vaccine

As in the past, this vaccine was purchased from the Kenya Veterinary Service and distributed from the Laboratory. The demands fell slightly from 1,561 doses in 1944 to 1,442 doses.

386 privately owned horses were vaccinated and the remaining doses were used on Government and Army animals. As far as is known no vaccinated horse or mule contracted the disease.

VII. Blackleg Vaccine

As in 1944, 2,400 doses of blackleg "anaculture" vaccine were issued for the protection of cattle in a known infected area in Kordofan Province.

VIII. Foot and Mouth Virus

On account of the prevalence of foot and mouth disease in the Western Sudan all cattle destined for export were infected by intralingual injection of the virus in order to prevent this disease interrupting their movement north and 76,665 doses of virus were issued for this purpose.

Foot and mouth is a very mild disease in the Sudan and, by itself, is of little economic importance. Despite the fact that nearly half the export cattle had to be infected when grass was dry and scarce little or no loss of condition occurred. There is still no evidence to suggest that more than a single type of virus exists in the country.

IX. Contagious Bovine Abortion

The vaccination of the grade cattle of the Belgravia Dairy with McEwen's strain of *Br. abortus* 45 (20) referred to in the two preceding Annual Reports was discontinued early in the year.

Out of 75 negatively reacting cows that were vaccinated earlier with strain 45 (20) two months and one month respectively before service and which remained negative for a further period of at least three months, seven became positive and three of these aborted.

Twenty negatively reacting cows kept under identical conditions were observed as controls and four of these became positive, two of them aborting.

In view of the greatly reduced incidence of the disease in the herd and the inconclusive results following the use of the vaccine, vaccination was suspended.

X. Specimens Examined

The examination of pathological specimens is one of the minor activities of the laboratory as most of the diagnoses are made by Veterinary Inspectors. The number of specimens submitted for examination was 1,577 as compared with 1,807 in the preceding year. The vast majority of them were of no particular interest but the following are worthy of short comment.

1. Tuberculosis.

This disease is always worthy of mention when found if only to stress the relative rarity of its occurrence. Altogether, five cases of infection were detected, four in cattle and one in a domestic duck.

All the bovine cases were from zebu cattle slaughtered at the Khartoum Municipal and Military abattoirs and amounted to about 0.05 per cent of the total carcasses inspected.

The duck (Muscovy breed) showed generalised lesions of the disease and was the first case of tuberculosis in a bird recorded in this country. It had been bred in Tonj in the Southern Sudan and had been brought to Khartoum a short time before it died.

2. Abu Girba.

A disease locally known as "Abu Girba" was reported to have caused heavy losses in sheep and goats in Blue Nile Province. Dogs were said to be very susceptible to the same disease and all infected ones died. There were no reports of the infection occurring in camels, cattle or human beings.

A few infected sheep and goats were sent to the laboratory but the condition was not diagnosed. All attempts at transmission of the disease failed and unfortunately the investigation had soon to be suspended on account of there being no leave-relief to continue the work. By the latter part of the year the disease appeared to have died out.

3. "Filaria"

Filariod worms, probably belonging to the genus *onchocerca*, were recovered from the aorta of a bovine carcass from the Khartoum abattoir.

The wall of the thoracic aorta was thickened and showed numerous nodules containing short, fine, delicate worms, some of them hanging freely in the lumen of the aorta.

4. Swine fever.

An outbreak of swine fever occurred in two groups of pigs kept in adjoining compounds at Khartoum North. About 500 pigs were involved and most of them had died before the disease was reported. Symptoms and postmortem appearances were typical of swine fever and the disease was experimentally transmitted to healthy pigs by the injection of a bacteria-free filtrate.

This was the first time for the disease to be diagnosed in the Sudan but it was known to be widespread in the adjoining territory of Eritrea. The probable source of infection was unboiled swill from military messes where Eritrean pork had been used.

5. Demodectic mange in game animals.

Two cases were discovered at the Khartoum Zoological Gardens in young Nile Lechwe (*onotragus megaceros*) which had been captured in the Southern Sudan a short time previously. Both responded to the usual treatment.

Other less interesting diagnoses included :—

- Cattle : *Tryp. congolense*, *Tryp. vivax*, *Theileria annulata*,
 Actinomyces farcinicus, *Brucella abortus*, *Setaria cervi*,
 Cysticercus bovis, *Borrelia theileri*, Psoroptic mange.
- Sheep : *Piroplasma ovis*.
- Camels : *Tryp. evansi*, Sarcoptic mange.
- Equidae : Cryptococcus infections, ringworm, *onchocerca cervicales*,
 and various septic and helminthic infections.
- Poultry : Spirochaetosis, *Sarcoptes mutans*.

C. RESEARCH.

The volume of routine work of the laboratory was greater than in any previous year and amounted to more than three times what it was ten years previously. As no extra staff could be recruited and, in addition, the Senior Research Officer was engaged as a part-time lecturer in epizootiology to the final year students of the Khartoum Veterinary School, it was impossible to undertake any research work.

The export of cattle and sheep during the war years has been a heavy drain on the animal population of the Sudan, and in view of the world food shortage this virtually unlimited demand for livestock and animal products is likely to continue for many years. It is therefore evident that in order to make the best possible use of the vast potential wealth of the large pastoral areas, measures should be taken to reduce wastage from disease to a minimum, and to increase the preparation of the animal products to the maximum practicable.

Before these results can be achieved considerable research in both spheres is necessary and, the earlier the many urgent problems which await solution are investigated, the greater will be the benefit to the Sudan.

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